

## Adding Vectors Graphically Program

This program will sketch two vectors in standard position. Using the parallelogram law for the vector addition, the program also sketches the vector sum. Be sure to set an appropriate viewing rectangle.

```
:addvect( )
:Prgm
:ClrIO
:Input "ENTER a",a
:Input "ENTER b",b
:Input "ENTER c",c
:Input "ENTER d",d
:ClrDraw
:Line(0,0,a,b)
:Line(0,0,c,d)
:a+c→e
:b+d→f
:Line 0,0,e,f
:Line a,b,e,f
:Line c,d,e,f
:Pause
:setMode("Split 1 App","Home")
:Stop
:EndPrgm
```

## Mandelbrot Set Program

This program can be used to determine if a complex number is in the Mandelbrot Set. The number is entered in two parts, the real part of the complex number and the imaginary part of the complex number. After entering the number, press  to see the next number in the sequence. If the terms of the sequence become very large, the sequence is unbounded and the complex number is not in the Mandelbrot Set. Press   to quit the program. The  $\infty$  symbol will be displayed when a number has exceeded the capacity of the calculator.

```
:mandlbrt( )
:Prgm
:Input "enter real part",a
:Input "enter imaginary part",b
:a→c:b→d
:0→n
:Lbl top
:ClrIO
:n+1→n
:Disp "term number",n
:Disp "real part",a
:Disp "imaginary part",b
:Pause
:a→f:b→g
:f^2-g^2+c→a
:2*f*g+d→b
:Goto top
:EndPrgm
```